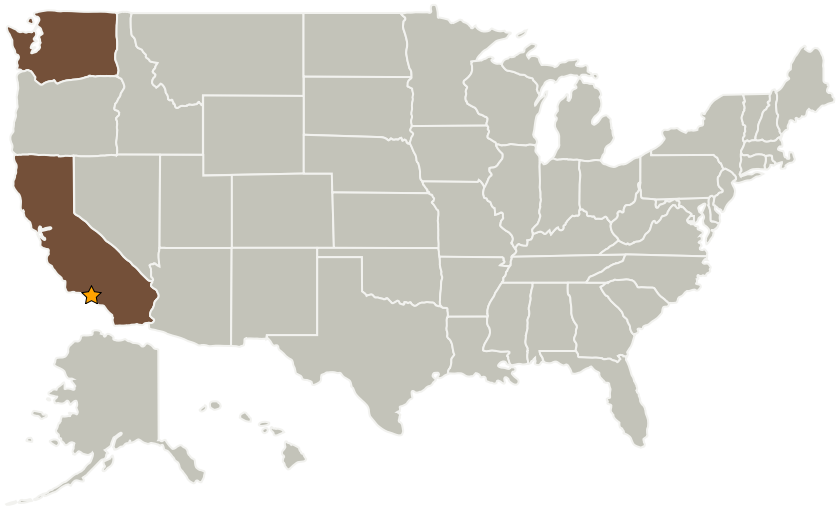
A High Performance Cathode Heater for Hall Thrusters, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

High current hollow cathodes are the baseline electron source for next generation high power Hall thrusters. Currently for electron sources providing current levels >50 A and cathodes utilizing LaB6 emitters, the only viable, long life heater technology is a low reliability, low producibility, multi-element heater constructed from MgO insulated coaxial heater cable. In the Phase I project we will develop novel insulator materials to replace MgO that can provide high temperature capability, with good thermal conductivity and electrical isolation. We will design, fabricate, and test prototype swaged coaxial heaters incorporating the novel insulators, in collaboration with a heater manufacturer and an end user aerospace company.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Sienna Technologies, Inc.	Supporting Organization	Industry	Woodinville, Washington

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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California	Washington

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Ender Savrun

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.2 Electrostatic